Elevation in feet

marker (m) mapped in middle of unit in southern part of

forming. Upper 240 feet (73 m) of 1,600-2,100 feet (488-

640 m) exposed; remainder determined from well logs.

## **DESCRIPTION OF MAP UNITS**

Man-made fill-- Tailings pond, railroad fill, foundation Qf materials; mostly in the Potash area.

Alluvium-- Clay, silt, sand, and gravel deposits along the Qa more important active rivers, streams, and washes.

Terrace alluvium-- Rounded, moderately sorted gravel Qat (cobbles and pebbles) transported into the area by the Colorado River and deposited at several levels. Contains lenses of finer sand and silt, some of which contain flour gold and magnetite.

Mixed alluvial and colluvial deposits-- Poorly sorted Qac mixture of clay, silt, sand, pebbles, angular cobbles, and boulders; coarse clasts consist mostly of sandstone or sandy limestone.

Mixed alluvial and eolian deposits-- Sand, silt, and gravel Qae deposits of fluvial origin interspersed with sand and silt of eolian and colluvial origin deposited along less active washes.

Mixed eolian and alluvial deposits-- Sand and silt of eolian Qea origin interspersed with minor silt, sand, and gravel of fluvial origin that fills hollows and covers benches on sandstone deposits.

Dune and sheet sand deposits.

Elevation in feet

Back

-----

Elevation in feet

Qes

Qms,

Jms

Landslide deposits-- Coherent to broken masses of bedrock units that have moved downslope.

Talus deposits-- Mostly rockfall blocks, boulders, and Omit smaller angular fragments lying on slopes directly below the parent outcrop.

> Salt Wash Member of Morrison Formation-- Light-yellowgray, cross-bedded, lenticular, fluvial sandstone interbedded with red and gray mudstone and siltstone; contains conglomeratic sandstone, gritstone, and thin limestone beds. Incomplete thickness is about 220 feet (67 m).

Tidwell Member of Morrison Formation-- Reddish, silty shale or mudstone with interbeds of fine-grained, yellow sandstone and gray concretions. Thickness 50-80 feet (15-24 m).

Moab Tongue of Entrada Sandstone-- Light-yellow-gray, fine- to medium-grained, resistant, and massive sandstone, forming impressive bare rock exposures, usually jointed outcrops. Thickness 60-100 feet (18-30

Slick Rock Member of Entrada Sandstone-- Orange-red, fine-grained, massive, cliff-forming sandstone, poorly exposed on this quadrangle; outcrops expose only the upper 80 feet (24 m).

NOTE: The Moab fault cuts out outcrops of the lower part of the Slick Rock Member (Jes; 250 feet / 76 m thick) and all of the Dewey Bridge Member (Jed; 100 feet / 30 m thick) of the Entrada Sandstone, as well as the uppermost part of the Navajo Sandstone, on this

Navajo Sandstone -- Massive, light-hued, eolian-crossbedded sandstone; forms cliffs, rounded knolls, and domes; contains local thin, hard, carbonate beds; outcrops expose an incomplete 400-foot (122-m) section on this quadrangle.

Kayenta Formation-- Reddish to lavender-gray sandstone with local white and dark-brown beds with thin interbeds of reddish siltstone and mudstone; ledgy, hard bench former; contains local micaceous sandstone and intraformational conglomerate beds. Thickness 220-340 feet (67-104 m).

Wingate Sandstone-- Massive, fine-grained, well-sorted sandstone; forms orange to dark-brown prominent cliffs. Thickness 300-400 feet (91-122 m).

Chinle Formation -- Reddish-brown, silty, fine-grained, fluvial sandstone interbedded with considerable mudstone and gritstone; locally contains thick-bedded, ledgy, hard sandstone that weathers black, known as the Black Ledge; base contains lenses of white, friable gritstone, mottled siltstone, and lenticular sandstone. Thickness 320-400 feet (98-122 m).

Moenkopi Formation-- Brown, evenly bedded, sandy shale **T**im and micaceous, silty sandstone; forms smooth slopes interrupted by common thin ledges; commonly ripplemarked sandstone; in southern part of quadrangle a more resistant blocky-appearing unit, the Hoskinini

Oil show

Oil and gas show

producing horizon

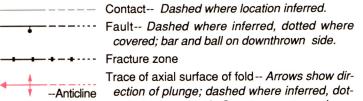
Member, is found at the base. Thickness 300-520 feet

(91-158 m). Upper member of Cutler Formation-- Red and maroon, mostly cliff-forming, arkosic sandstone and conglomerate with subordinate sandy mudstone; sandstones are both fluvial and eolian; limestone and calcareous mudstone

the quadrangle. Thickness 700-1,000 feet (213-305 m). Lower member of Cutler Formation-- Same as upper Cutler member, but contains a series of thin, fossiliferous, gray limestone beds or partings; represents part of former Elephant Canyon interval. Thickness 180-220

feet (55-67 m). Honaker Trail Formation-- Fossiliferous, gray limestone, cherty limestone, limy mudstone, yellow and purple siltstone, and thick arkosic sandstone, generally cliff-

## **MAP SYMBOLS**



ted where covered. Structure contours drawn on base of Wingate Sandstone. Contour in---Syncline terval, 200 feet (60 m).

Strike and dip of bedding Strike of nearly vertical joints

Oil and gas well Oil well

Dry hole

Shut-in oil well Uranium mine adit

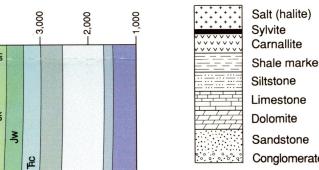
Prospect

Qes/Qac Stacked map units--Indicate thin or discontinuous cover of one

unit over another unit.

LOG OF SOUTHERN NATURAL GAS Long Canyon No. 1 Sec. 9, T. 26 S., R. 20 E.

Jw



★ Oil and gas Shale marker Conglomerate **FORMATION** Marker beds and salt horizons Wingate

LITH-OLOGY Sandstone Chinle Formation Moenkopi Formation - -1,000´ Cutler Formation Honaker Trail Formation - -3,000°

> - -4,000´ SALT 3 GOTHIC SHALE SALT 4 Sylvite SALT 5 CHIMNEY ROCK SALT 6 Carnallite marker - -5,000´ SALT 7 SALT 8 SALT 9 SALT 10 Paradox Formation SALT 11 SALT 12 SALT 14 SALT 15 - -6,000´ SALT 16 SALT 17

Carnallite and sylvite SALT 19 SALT 21 - -7,000° CANE CREEK

- -8,000

Pinkerton Trail Fm. (Pht) Molas Fm. (₱m) Leadville Fm. (Mlv) Ouray Fm. (Do) Elbert Fm. (De)

McCracken Ss. (Dem)

Qf Historical Holocene QUATERNARY 10,000 years -Qac Qae Qat Pleistocene unconformity Jms Upper Morrison Formation Jmt unconformity Jem Entrada Sandstone Middle **JURASSIC** --(Not exposed on quadrangle) Jed unconformity

**CORRELATION OF MAP UNITS** 

Jn Navajo Sandstone Lower Kayenta Formation Wingate Sandstone unconformity? Chinle Formation Upper **TRIASSIC** unconformity Moenkopi Formation unconformity **PERMIAN Cutler Formation** Lower Pcl PENNSYL-Honaker Trail Formation Upper **VANIAN** 

## LITHOLOGIC COLUMN

PERIOD	SERIES	FORMATION and MEMBERS		SYMBOL	THICKNESS Feet (meters)	LITHOLOGY
QUAT.		Surficial deposits		Q	0-50 (0-15)	
JURASSIC	Upper	Morrison Formation	Salt Wash Member	Jms	200-250 (60-76)	
		Σď	Tidwell Mbr.	Jmt	50-80 (15-25)	Large white cherty concretions
	Middle	Entrada Sandstone	Moab Mbr.	Jem	60-100 (18-30)	Commonly jointed
			Slick Rock Mbr.	Jes	250 (76)	MISSING ON QUAD- RANGLE DUE TO DISPLACEMENT OF MOAB FAULT
			Dewey Bridge Member	Jed	100 (30)	Contorted bedding Forms arches on
	Lower	Glen Canyon Group	Navajo Sandstone	Jn	450-500 (137-152)	rorms arches on quadrangle  High-angle cross-bedding
			Kayenta Formation	Jk	220-340 (67-104)	Ledge and bench forming
			Wingate Sandstone	Jw	300-400 (91-122)	Forms arches on quadrangle  Prominent cliff-former
TRIASSIC	Upper	Chinle Formation		Tac	320-400 (98-122)	"Black Ledge"  Mottled siltstone Discontinuous white gritstone
	Lower	Moenkopi Formation	Upper member	Tkm	240-440 (73-134)	Upper ledge-forming unit Discontinuous limestone Middle ledge-forming unit Ripple marks
			Hoskinnini Member		60-80 (18-25)	Lower slope-forming unit
PERMIAN	Lower	Cutler Formation	Upper member	Pcu	700-1000 (213-305)	Gypsum  Arkosic sandstone  Fluvial and eolian sandstone  Limestone marker, m (southern area only)
			Lower member	Pd	180-220 (55-67)	Fossiliferous thin limestone ledges
PENNSYLVANIAN	Upper (Virgilian)	Honaker Trail Formation		₽h	1600-2100 (488-640)	Fusulinids  SUBSURFACE ONLY

